Attachment A

Proposed Change

A change is proposed to Technical Specification Section 4.7.A.2.a.4 to revise the acceptance criteria for allowable MSIV leakage from an individual valve leakage criteria to a maximum total combined main steam line leakage. The allowable leakage of 11.5 scfh per valve would be replaced with a maximum combined main steam line leakage of 46 scfh.

Reason for Change

This revision will provide a more realistic maintenance threshold resulting in reduced MSIV repair and refurbishment costs, reduced personnel dose exposures, shorter scheduled outages, and extended effective service life of the MSIVs. Although test data (attached Table 1) show improved leakage performance, MSIV leakage rates in excess of the current Technical Specification limit have still occurred. Although the MSIVs can be repaired or refurbished to meet the current limits, the proposed change from 11.5 scfh per valve to a total of 46 scfh for all four lines provides a more realistic leakage limit.

Background

Each of Pilgrim's four main steam lines contain two (inboard and outboard), quick-closing MSIVs. The safety function of the MSIVs is to isolate the reactor system to minimize loss of coolant inventory and provide primary containment to limit radiological release. In the case of a steam line break, as evaluated in UFSAR Section 14.5.4, closure of the MSIVs terminates the blowdown of reactor steam in sufficient time to prevent an uncontrolled release of radioactivity from the reactor vessel to the environment. In the case of a LOCA, as evaluated in Section 14.5.3 of the UFSAR, the MSIVs isolate the reactor from the environment and prevent the direct release of fission products from the containment.

The allowable leak rate of 11.5 scfh specified for each of the MSIVs is used to quantify a maximum volume of primary containment atmosphere that can bypass the secondary containment and leak directly to the environment following a design basis LOCA. The Technical Specification requirements assure that this MSIV leakage will not exceed the maximum leak rate of 46 scfh which was the leakage assumed in our LOCA radiological analyses. The calculated results are evaluated against the dose guidelines contained in 10CFR Part 100 for offsite and 10CFR Part 50, Appendix A, General Design Criteria (GDC) 19 for the control room. The testing requirements for these valves are found in 10CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors". The type C test requirements in Appendix J typically result in the valves being tested every refueling outage by local pressurization with air ≥23 psig, and the current Technical Specification limit per valve of 11.5 scfh.

Industry operating experience with the MSIVs indicates that degradation occasionally occurs in the leak-tightness of the valves. During the early operating history of BWRs in the 1970s, a large number of MSIV leak test failures were reported. Because of concerns that this leakage could compromise the containment function, the NRC formulated a position to require installation of safety-grade leakage control systems to treat this leakage on all BWRs with construction permits issued after March 1, 1970. (Reference: Regulatory Guide 1.96: "Design of Main Steam Isolation Valve Leakage Control Systems for Boiling Water Reactor Nuclear Power Plants"). Pilgrim, along with other pre-1970 licensees, was exempted from this requirement as long as inservice inspection programs continued to ensure that the MSIVs maintain leakage within the technical specification limits. If valve inspection showed recurring problems with excessive leakage, the NRC expectation was that plants experiencing the leakage would give consideration to installation of a supplementary leakage control system. Since high leakages were continuing to be experienced by the industry in the late 1970s and early 1980s, the Boiling Water Reactor Owners Group (BWROG) formed an MSIV leakage control committee to determine the causes of the high MSIV leakage rates and to develop recommendations for reducing the leakage.

Pilgrim personnel actively participated in this BWROG effort, and through actions taken in response to the resultant BWROG recommendations, valve leakage rates in excess of allowable have decreased significantly. Modifications made to the valve design and changes in the methods of refurbishment have improved the operability, testability, and reliability of the MSIVs. Table 1 shows the results of our last four tests conducted after modifying and refurbishing the valves. As shown in the table, only one valve has exceeded the Technical Specification allowable leakage criteria and was refurbished accordingly. A review of the data also demonstrates that adopting a total-leakage criteria will offset the need to refurbish valves should leakage exceed the existing per valve criteria, yet remain below the proposed total leakage criteria.

Safety Evaluation and Determination of No Significant Hazards

The Code of Federal Regulations (10CFR50.91) requires licensees requesting an amendment to provide an analysis, using the standards in 10CFR50.92, that determines whether a significant hazards consideration exists. The following analysis is provided in accordance with 10CFR50.91 and 10CFR50.92.

1. The operation of Pilgrim Station in accordance with the proposed Amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment does not involve a change to structures, components, or systems which would affect the probability of an accident previously evaluated in the Pilgrim Updated Final Safety Analysis Report (UFSAR). The proposed amendment results in no change in radiological consequences of the design basis LOCA as currently analyzed for Pilgrim Station. These analyses were calculated using the combined total leakage factor of 46 scfh for determining acceptance to the regulatory limits for the offsite, control room, and Technical Support Center (TSC) doses as contained in 10CFR100 and 10CFR50, Appendix A, GDC 19. The proposed change does not compromise existing radiological equipment qualification, since the combined total leakage rate of 46 scfh has been factored into our existing equipment qualification analyses for 10 CFR 50.49.

2. The operation of Pilgrim Station in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

There is no modification to the MSIVs or other plant system or structure associated with this amendment which could impact their capability to perform their design function. The total MSIV leakage rate of 46 scfh is included in the current radiological analyses for the assessment of dose exposure following an accident. This proposal changes the allowable leakage rate from a per valve to a total combined line leakage acceptance criteria but does not change the cumulative allowable value. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously analyzed.

3. The operation of Pilgrim Station in accordance with the proposed amendment will not involve a significant reduction in a margin of safety.

The allowable leak rate limit specified for the MSIVs is used to quantify the maximum amount of bypass leakage assumed in the LOCA radiological analysis. Results of the analysis are evaluated against the dose guidelines contained in GDC 19 and 10CFR100. The margin of safety in this context is considered to be the difference between the calculated dose exposures and the guidelines provided by the GDC 19 and 10CFR100. Therefore, since the maximum allowable leakage for each valve was assumed and used as the total allowable leakage for the purpose of calculating potential dose, the margin of safety is not affected because the dose levels remain the same.

The proposed change has been reviewed and recommended for approval by the Operations Review Committee and reviewed by the Nuclear Safety Review and Audit Committee.

Schedule of Change

The next scheduled testing of MSIV leak tightness will be conducted during our next refueling outage planned to commence April 1, 1995. Therefore, we request this change on or before April 1, 1995, to be implemented within 30 days of issuance.

TABLE 1

MSIV	RFO 9		RFO 8		MCO 8		RFO 7	
	Date Tested	LKG (SLM)	Date Tested	LKG (SLM)	Date Tested	LKG (SLM)	Date Tested	LKG (SLM)
1A	1993	3.331	1991	0.101	3/14/90	1.030	5/31/88	0.613
2A	1993	1.793	1991	0.629	3/14/90	1.030	6/1/88	0.613
1B	1993	0.550	1991	0.755	3/14/90	0.004	6/1/88	0.065
2B	1993	0.550	1991	10.93	3/14/90	0.004	6/1/88	0.065
1C	1993	6.295	1991	5.933	3/14/90	0.003	6/1/88	0.065
2C	1993	2.494	1991	0.824	3/14/90	0.003	6/1/88	0.065
1D	1993	0.542	1991	3.121	3/14/90	2.300	6/1/88	0.945
2D	1993	1.884	1991	1.082	3/14/90	2.300	6/1/88	0.945

Conversion Factor:

6.83 SLM = 11.5 scfh

ATTACHMENT B

PROPOSED TECHNICAL SPECIFICATION PAGES

LIMITING CONDITIONS FOR OPERATION

3.7 CONTAINMENT SYSTEMS (Cont)

A. Primary Containment (Cont)

5. All containment isolation check valves are operable or at least one containment isolation valve in each line having an inoperable valve is secured in the isolated position.

Primary Containment Isolation Valves

2. b. In the event any automatic Primary Containment Isolation Valve becomes inoperable, at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition. (This requirement may be satisfied by deactivating the inoperable valve in the isolated condition. Deactivation means to electrically or pneumatically disarm, or otherwise secure the valve.)*

* Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under ORC approved administrative controls.

SURVEILLANCE REQUIREMENTS

4.7 CONTAINMENT SYSTEMS (Cont)

A. Primary Containment (Cont)

4. Combined main steam lines: 46 scfh @ 23 psig.

where x = 45 psig
L_t = .75 L_a
L_a = 1.0% by weight of the contained air @ 45 psig for 24 hrs.

Primary Containment Isolation Valves

2. b. 1 The primary containment isolation valves surveillance shall be performed as follows:

a. At least once per operating cycle the operable primary containment isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and closure times.

b. Test primary containment isolation valves:

1. Verify power operated primary containment isolation valve operability as specified in 3.13.

2. Verify main steam isolation valve operability as specified in 3.13.

ATTACHMENT C

CURRENT TECHNICAL SPECIFICATION PAGES
ANNOTATED WITH PROPOSED CHANGES

LIMITING CONDITIONS FOR OPERATION

3.7 CONTAINMENT SYSTEMS (Cont)

A. Primary Containment (Cont)

5. All containment isolation check valves are operable or at least one containment isolation valve in each line having an inoperable valve is secured in the isolated position.

SURVEILLANCE REQUIREMENTS

4.7 CONTAINMENT SYSTEMS (Cont)

A. Primary Containment (Cont)

4. ~~Any one main steam line isolation valve: 11.5 scf/hr @23 psig.~~

where x = 45 psig
L_t = .75 L_a
L_a = 1.0% by weight of the contained air @ 45 psig for 24 hrs.

Combined main steam lines: 46 scfh @ 23psig.

Primary Containment Isolation Valves

2. b. In the event any automatic Primary Containment Isolation Valve becomes inoperable, at least one containment isolation valve in each line having an inoperable valve shall be deactivated in the isolated condition. (This requirement may be satisfied by deactivating the inoperable valve in the isolated condition. Deactivation means to electrically or pneumatically disarm, or otherwise secure the valve.)*

* Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under ORC approved administrative controls.

Primary Containment Isolation Valves

2. b. 1 The primary containment isolation valves surveillance shall be performed as follows:

a. At least once per operating cycle the operable primary containment isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and closure times.

b. Test primary containment isolation valves:

1. Verify power operated primary containment isolation valve operability as specified in 3.13.

2. Verify main steam isolation valve operability as specified in 3.13.